REMARKS

In the outstanding Office Action, the Examiner rejected claims 1-34 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,546,544 to Kawakami ("Kawakami") in view of U.S. Patent No. 6,225,025 to Hoshino ("Hoshino"). No claims are amended herein. Claims 1-34 remain pending in this application.

Regarding the rejection of claims 1-34 under 35 U.S.C. § 103(a), Applicants respectfully disagree with the Examiner's arguments and conclusions as set forth in the outstanding Office Action[1]. Accordingly, Applicants respectfully traverse this rejection on the ground that no *prima facie* case of obviousness has been established.

To establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), each of three requirements must be met. First, the reference or references, taken alone or combined, must teach or suggest each and every element recited in the claims. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of the three requirements must " be found in the prior art, and not be based on applicant's disclosure. " *See* MPEP § 2143, 8th Ed. (Rev. 4), October, 2005. At a minimum, the Examiner has failed to establish a *prima facie* case of obviousness because the

---

[1] The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement of characterization in the Office Action.

references, whether taken alone or in combination, fail to teach or suggest each and every element of the claims.

In the Office Action, the Examiner appears to assert that Kawakami teaches all of the elements in claims 1-34 except for "the use of standard cells on CP apertures listed in an order of frequency of use according to a difference between a VSB shot number and a CP shot number, as recited in claims 20-23, 25, 27, 29-31, and 33." Office Action, page 5. Applicants respectfully disagree with the Examiner's assertion, because Kawakami fails to teach or suggest every element in at least independent claims 1, 7, and 15. Specifically, Kawakami fails to teach or suggest a combination including at least "conducting logic synthesis for the CP apertures [and] selecting one of the CP apertures ... which has the highest throughput in delineating one of the patterns," and "conducting logic synthesis again [and] selecting one of the CP apertures ... which has a throughput higher than a desired throughput in delineating one of the pattern," as recited in independent claims 1, 7, and 15 (emphasis added).

Kawakami teaches:

> generating a pattern group for each layer of the integrated circuit including a plurality of the basic elements; analyzing the degree of frequency at which each basic element is used in the integrated circuit; selecting from the pattern group a pattern used as a plurality of the block patterns based on the analyzed degree of frequency at which each basic element is used... (col. 5, lines 28-35)

wherein

> by reference to the cell reference frequency information 75 and the system restraint information/mask restraints 72, the

> cells to be changed to masks are determined thereby to produce a mask layout A76 (col. 8, lines 17-20).

Kawakami is silent as to selecting the block pattern based on throughput, and is also silent as to analyzing the degree of frequency again to select the block pattern. Kawakami thus fails to teach or suggest "conducting logic synthesis for the CP apertures [and] selecting one of the CP apertures ... which has the highest throughput in delineating one of the patterns," and "conducting logic synthesis again [and] selecting one of the CP apertures ... which has a throughput higher than a desired throughput in delineating one of the pattern," as recited in independent claims 1, 7, and 15.

Hoshino, cited by the Examiner at page 5 of the Office Action for allegedly teaching "a method of fabricating semiconductor devices with electron beam lithography that utilizes mask's having block (CP) apertures formed using shot number analysis based on frequency of use," fails to cure the above-noted deficiency of Kawakami. Hoshino teaches:

> the exposure data verifying function 12 includes a pattern data display function 20 used for displaying a pattern data, an exposure data analysis unit 21 used for carrying out an analysis of the exposure data [created] by the exposure data creation function 11, and exposure throughput calculation function 22 for calculating the throughput of the exposure data creation function... (col. 8, lines 17-24)

wherein

> the exposure data is created in the exposure data creation function 11 such that the exposure time is minimized, by reducing the exposure data size (col. 9, lines 49-51).

Hoshino thus teaches creating exposure data in order to minimize the exposure time.

This cannot constitute a teaching of "conducting logic synthesis for the CP apertures

[and] selecting one of the CP apertures ... which has the highest throughput in delineating one of the patterns," as recited in independent claims 1, 7, and 15. Moreover, Hoshino is silent as to "conducting logic synthesis again," and thus fails to teach or suggest "conducting logic synthesis again [and] selecting one of the CP apertures ... which has a throughput higher than a desired throughput in delineating one of the pattern," as also recited in independent claims 1, 7, and 15.

Kawakami also fails to teach or suggest a combination including at least "recording the standard cell library ... on said CP apertures related to the standard cells," as recited in claims 1, 7, and 15. Kawakami only teaches that layout data are produced by combining the cells stored in a cell library (column 7, lines 58 – 66). However, Kawakami fails to teach that cells stored in the cell library are placed on the aperture. In Kawakami, the cells to be placed on the aperture are determined to produce a mask layout by reference to the cell reference frequency in the layout data, and apertures are not selected before layout data is produced. Kawakami thus fails to teach or suggest at least "recording the standard cell library ... on said CP apertures related to the standard cells," as recited in claims 1, 7, and 15 (emphasis added).

Hoshino also fails to teach at least "recording the standard cell library ... on said CP apertures related to the standard cells," as recited in claims 1, 7, and 15, and is not relied upon by the Examiner for such teachings.

Because Kawakami in view of Hoshino fails to teach or suggest every element recited in independent claims 1, 7, and 15, a *prima facie* case of obviousness has not

been established. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claims 1, 7, and 15 under 35 U.S.C. § 103(a).

Claims 2-6, 22-26 and 34, claims 8-14 and 27-29, and claims 16-21 and 30-33 respectively depend from independent claims 1, 7, and 15, and thus require all of the respective elements of claims 1, 7, and 15. Because Kawakami in view of Hoshino fails to teach or suggest every element recited in claims 1, 7, and 15, that combination of references also fails to teach or suggest every element required by the dependent claims. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection of claims 2-6, 8-14, and 16-34 under 35 U.S.C. § 103(a).

In view of the foregoing remarks, Applicants respectfully request reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: March 22, 2006

By: _____
Darrell D. Kinder, Jr.
Reg. No. 57,460